EVALUATING THE SOCIO-ECONOMIC IMPACT OF RURAL ROAD PROJECTS: THREE APPROACHES TO BASELINE AND FOLLOW-UP DATA COLLECTION DESIGNS

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1. INTRODUCTION

The purpose of this report is to assist in planning of baseline and follow-up surveys after it has been decided that systematic data collection is necessary for evaluating the socio-economic impact of a rural road project. Planning these surveys consists of four main steps: (1) identifying the most likely and important socio-economic impacts of the project; (2)«developing data specifications to measure these impacts; (3)«selecting an appropriate study approach based principally on funds available for project evaluation; and (4) writing a scope of work which clearly articulates the decisions made concerning data requirements and study approach. Although rural road improvement projects are the primary focus, the basic planning steps discussed below are generally applicable to other AID projects which will undertake baseline and follow-up surveys.

2. FOUR STEPS IN PLANNING BASELINE AND FOLLOW-UP SURVEYS

Baseline and follow-up surveys are frequently cited in Project Papers as the principal vehicle for obtaining necessary data to evaluate socio-economic impacts. The baseline survey is supposed to collect data on key conditions which the project should affect if successful. The follow-up survey should replicate the baseline by collecting data on the same key conditions at the conclusion of the project. Together the baseline and follow-up surveys constitute a simple before-and-after research design. Assuming that contextual factors, such as national economic policies, world commodity markets, weather conditions and other confounding effects are taken into account, the baseline and follow-up surveys ought to provide project evaluators with some empirical evidence of whether the project has or has not had an impact on the beneficiary population.

In practice, baseline and follow-up designs have proven to be difficult to implement for a variety of reasons. Even under the best of circumstances, these surveys often produce seriously flawed data. Severe time and budget limitations, combined with the difficulty of collecting reasonably accurate and representative data under field conditions in developing countries, frequently complicate data collection efforts. Nonetheless, baseline and follow-up surveys on a project-by-project basis are presently viewed within the Agency as the principal, if not the sole means of assessing change over time attributable to project interventions.

For the AID project officer who must manage baseline and follow-up surveys, the tasks of establishing data requirements, selecting an appropriate approach or method, developing an adequate scope of work, and finding competent professionals to conduct the surveys -- all within the financial and time limitations of the project -- can be difficult if not outright

confusing.Yet these steps are crucial if the baseline and follow-up surveys are to produce the information needed by the project.

Planning baseline and follow-up surveys can be simplified by following four basic steps. The first step is to identify clearly the most likely and/or most important project impacts. These impacts determine the data requirements for the project and the content of the baseline and follow-up surveys. The second step, therefore, is developing data specifications to measure project impacts. The third step is selecting an appropriate study approach. Available funding often determines which approach is feasible; however, there are additional considerations in selecting an appropriate method of data collection even when working with a very limited budget. The last step in planning surveys is writing a scope of work which clearly specifies the types of data to be collected, the study approach to be used, the content of final reports, and other deliverables.

The most difficult steps are selecting specific indicators and choosing an appropriate method for data collection. It is impossible to state exactly how to make these decisions in the abstract primarily because the specific information requirements of projects vary considerably. Furthermore, the evaluation might also serve additional purposes, such as providing a training opportunity for host country staff, which might also influence these decisions. Consequently, only generalized guidance which can be tailored to the particular needs of the project can be provided.

2.1 Step 1: Identifying the Direct and Derived Socio-Economic Impacts of Rural Road Projects

The socio-economic impact of rural road projects can be divided into two categories -- direct and derived. Direct impacts are those which are most immediately traceable or closely linked to project outputs. Rural road projects typically have a direct impact on (1) the provision and use of transport services and facilities and (2) commercial activity which is highly dependent on or is an integral part of the transportation system (e.g., marketing, warehousing, vehicle repair). Derived impacts can be viewed as dependent on direct impacts. That is, derived impacts are likely to occur only after basic or initial improvements in the transportation system have been achieved. The derived impacts of rural road projects typically include changes in farm production, agricultural technology, land tenure and/or land value, and the quality of life in communities located in the project area. Direct impacts tend to be more closely tied to the constraints the project is designed to resolve or mitigate, whereas derived impacts are additionally dependent on constraints beyond the scope of the project or outside of the transportation sector. Another way to distinguish direct from derived impacts is in relation to the project logical framework. In general, direct impacts reflect the purpose(s) of the project, whereas derived impacts correspond to the goal(s) of the project.

The direct versus derived distinction is useful because it suggests logical priorities for assessing project impacts and, consequently, for data requirements. Sections 2.3.1 and 2.3.2 briefly discuss some of the more common direct and derived impacts of rural road projects. It should be noted, however, that not every project will have all or even most of the impacts discussed in these sections. Rather, the impacts that a specific project can realistically be expected to have depends on the type of road improvement (e.g., construction of new penetration roads, upgrading local feeder roads, etc.), the nature of the local economy (e.g., agricultural systems, indigenous industries, etc.), proximity to major towns and cities, linkages to other roads, confounding effects of other development activities which will reinforce the impacts of the road project and vice versa (e.g., development of an agricultural extension service), social and cultural systems (including land tenure patterns), and other contextual or situational factors.

2.1.1 Direct Impacts

The data requirements for evaluating rural road projects are determined by the expected socio-economic impacts of the project. Project designers commonly anticipate direct and positive effects on the transportation system by reducing travel time and costs. In some cases, these benefits result from a change in the mode of transportation (e.g., a shift from animal drawn transport to motorized vehicles) due to road improvements. Reduced transportation costs mean direct savings to vehicle operators by lowering fuel and repair costs and lessening delays. Road improvements can increase the earnings or wages of vehicle operators because they will be able to make more trips, carry larger loads, and use the road more frequently throughout the year. Under the right circumstances (e.g., adequate competition among transportation providers), reduced transportation costs are sometimes passed along to small farmers and other users.

Rural road projects are also expected to have a direct impact on commerce and marketing. Better access to markets is typically expected to increase the flow of commodities both into and out of the project area. Producers within the region will be able to reach new markets, and producers outside the project area will find new consumers for their goods. Therefore, it is sometimes reasonable to expect higher farmgate prices or at least a greater volume of production being marketed at existing prices. Businesses oriented toward providing transportation or otherwise servicing the needs of those using the transportation system (e.g., intermediary traders, warehousers) should also benefit from the road project. In general, road improvements are expected to directly strengthen that part of the local economy that is most dependent on the transportation network and to better integrate the area into larger economic systems.

Many of the direct impacts which evaluation of rural roads projects might assess are also germane to the initial planning of the project. That is, transportation costs, estimates of

competitiveness among transporters, marketing activity, and the like constitute data which are often required for Project Identification Document (PID) and Project Paper (PP) preparation. When such data are actually collected for project design purposes, a cost-effective approach to evaluation is to replicate these measurements at the conclusion of the project. A before-and-after comparison of these data can provide evidence of the possible effects of the project.

2.1.2 Derived Impacts

In addition to the direct effects of the project, a number of derived impacts can also be anticipated. However, derived impacts are slower to emerge, and considerable time between completion of project outputs and evidence of such impacts is usually required.

The first and most important category of derived impacts of road improvements is effects on agricultural production. Lower transportation costs reduce the expense of agricultural inputs, such as fertilizer and improved seed. Lower input costs can encourage greater use by farmers, which in turn will increase production. Better transportation systems allow agricultural extension workers to reach a greater number of farmers and on a more frequent basis. Similarly, farmers will have better access to sources of credit (if such sources exist). If used for farm improvements or agricultural inputs, access to credit can likewise increase production. Improved access to markets can also stimulate farmer production because farmers can expect to be able to routinely get their crops to market. Crop mix might also change as a result of improved transportation to markets. Cash crops and food crops intended for local urban markets, such as vegetables and other perishables, might replace subsistence crops, or at least constitute a greater proportion of small farmer production. In short, farmers might obtain greater earnings due to increased commercial production. Alternatively, such changes can constitute a negative impact in that local food supplies might actually decrease as a result of increased cash crop production. It should be noted, however, that changes and improvements of this sort are highly dependent on factors which road improvement projects do not affect, such as favorable agricultural policies, availability of agricultural services to small farmers, and even weather conditions.

The second major category of derived impacts from rural road projects can be generally described as quality of life improvements. For example, greater access to services often results from road improvements. Health and family planning extension workers can visit more villages and do so more often. If the village has a health facility, it might be possible for a doctor to visit the village on a periodic basis. Alternatively, travel to larger towns is easier and faster as a result of road improvements, thus enabling villagers to obtain needed services in nearby towns or find off-farm employment. Another quality of life type of impact stems from local community participation in

construction and maintenance. Local labor is used for both construction and later maintenance in many projects. In some instances, labor is provided by communities on a voluntary basis. In other projects, work-for-pay arrangements provide employment and additional income for participating communities. If farm incomes increase as a result of the changes mentioned above, villagers will have additional resources to invest in better housing and other community improvements.

The third set of derived impacts -- changes in land value and tenure patterns -- can entail both positive and negative effects for the project's target population. In effect, impacts on land tenure and value concern the question of who actually benefits from rural improvement projects. Evaluation findings thus far seem to indicate that road projects generally reinforce existing economic and social inequalities unless a concerted effort is made to direct project benefits to poorer groups in the area. For example, as a result of greater access to markets due to road improvements, the value of land close to the road may increase. Depending on local land tenure arrangements, farmers who do not own the land they work can be displaced to less productive areas. Similarly, the possibility exists for greater concentration of land ownership by those who can afford to buy land at higher, inflated rates. Ethnic minorities and/or the poorer segments of the population in the project area can be most adversely affected by such changes.

2.1.3 Prioritizing Project Impacts

In general, a conservative approach should be taken to identifying the impacts that are most likely to result from the project and, therefore, that are most important to evaluate. Direct impacts are more likely to have occurred within a relatively short period of time after achievement of project outputs. Therefore, highest priority should be given to direct impacts of the project. Indications of positive direct impacts will be fundamental to concluding whether or not the project has been successful in achieving its major purpose(s). Derived impacts can take longer to occur and are perhaps better addressed through subsequent impact evaluations (e.g., several years after project completion) rather than end-of-project evaluations. Furthermore, derived impacts are affected by constraints which road improvements alone typically do not overcome. Determining to what degree road improvements contributed to such impacts can be a very difficult and even dubious exercise.

The total number of project impacts to be evaluated using survey data should be further limited. A general rule of thumb should be the fewer, the better. The reason for this is that each additional impact means additional data collection, which in turn increases the cost and time requirements for the surveys. Moreover, one of the most common errors which undermine AID's data collection efforts is collecting too much data. Too often data collection becomes an end in itself rather than a means to an end. Misguided notions that detail and thoroughness are

necessary should be avoided. A limited number of key indicators which reflect the most important impacts of the project will usually be sufficient. By limiting the evaluation of project impacts to the bare essentials, the possibility of data collection overkill is greatly reduced.

2.2 Step 2: Specifying Data Requirements for Measuring Selected Impacts

The direct and derived impacts of rural road projects define general categories of socio-economic data which could be collected by baseline and follow-up surveys for project evaluations. The following sections briefly discuss these categories. Again, it should be recognized that very few projects need all of the following types of data because the impacts of most projects will be much more limited.

2.2.1 Direct Impacts: Transportation and Marketing

Vehicle Operating Costs. Road improvements usually reduce operating expenses, such as repair and fuel costs. Data on licensing fees, road tariffs, and permits for access to towns and markets are needed to estimate the total expense of vehicle operation.

Wages, Income, and Vehicle Ownership. Increased transport activity combined with a longer period of time when roads are passable during the year can increase the earnings of vehicle owners and operators. A related question is whether truckers and drivers own the vehicles they operate. The number of owner/ operators might change during the course of the project due at least in part to road improvements and the impact on the local economy. Data on ownership also pertain to who benefits from the project.

Types of Available Transportation and Traffic Volume. The various types of transportation available (e.g., buses, trucks, taxis, animal drawn carts) and the routes each uses (e.g., improved roads, off-road tracks) can change as a result of road improvements. Traffic volume can also increase due to road improvements. Changes in the types of available transport, the routes they travel, and the volume of traffic can indicate efficiency and/or cost improvements in the system.

Freight Charges. Transportation charges might vary by type of commodity, by type of vehicle, and by route or roadway traveled. Data on user charges should reflect such variation (i.e., charges by commodity, by vehicle, and by route). Data on freight charges for commodities purchased by small farmers and other producers in the project area (e.g., fertilizer, seed) should be considered. In some cases, it might be possible to verify charges reported by transporters with farmers and other users of the system.

Passenger Use and Charges. Data on passenger use of improved roads can provide information about who benefited directly from the project. Data on the income of passengers, the purpose of their travel, whether they are carrying goods to market, and similar economic road-use indicators measure such project impacts. However, obtaining such data through road surveys can be costly and time consuming. Less rigorous, less expensive methods can be used to collect data on passenger charges by type of vehicle and type of route or roadway traveled. Such data monitor changes in passenger costs resulting from road improvements.

Travel Time. Data on travel time by type of vehicle between major towns or marketing centers can be used to estimate efficiency improvements. Seasonal variation, such as dry versus wet seasons, should be considered.

Competition. The benefits of road improvements, particularly reduced transportation costs, are more likely to reach small farmers and other users when transportation services are available on a competitive basis. In contrast, when the system is monopolized by a small or closed group of vehicle operators, such savings are generally not passed along to users. Data on the competitiveness of the system can, therefore, be particularly important for evaluating the impact of road improvements. Ethnic or cultural differences between providers of transportation and users can also serve as a basis for monopolizing the system and should be considered where such differences exist.

Intermediary Traders. In many countries, transporters function as marketing agents, buying directly from farmers and selling at central markets. In some countries, intermediary traders stand between the farmer and shipper. They buy the farmers' agricultural products, transport these goods to local marketing or shipping points (e.g., nearby towns), and sell them to truckers and other transporters who carry the commodities to major marketing centers. In such cases, data on the activities and charges of such intermediary traders are needed to track transportation charges incurred by small farmers in the project area.

Transportation-Dependent Businesses. Road improvements can directly affect local businesses which provide transportation-related services. Such businesses include vehicle repair shops and warehousing and local marketing establishments. In short, the growth of small businesses which are highly dependent on the transportation system can represent an important impact of road improvement projects.

Note: Much of the data in the above categories can be obtained directly from interviews with vehicle operators and verified by interviews with transport users.

2.2.2 Derived Impacts: The Local Economy and Quality of Life

Agricultural Inputs. Because road improvements lower transportation costs, rural road projects can contribute to lower agricultural input costs for seed, fertilizer, pesticides, and other chemicals and supplies. In turn, lower cost can encourage greater use leading to increased production. Because transportation cost reductions are usually passed along to small farmers and other users when transport services are competitive within the project area, data on competition among transport providers might be sufficient for many road projects. However, where decreasing the costs of agricultural inputs is considered a major objective of the project, actual cost data might be needed as well.

Agricultural Production. By increasing access to markets and lowering agricultural input costs, rural road projects can contribute to increased farm production. A more dependable or efficient transportation system assures farmers that their crops can be marketed, which, in turn, encourages increased commercial production. For projects which are expected to effect such changes, data on the major farming systems within the project area are needed. This would include area under production, crop mix, production costs, yields, livestock production, marketing, and farmgate prices.

Land Tenure and Land Value. The economic stimulus provided by road improvements can affect land tenure and land values in the project area particularly for locations near or along the road. Therefore, data on land tenure and land value are useful for estimating both the negative and positive effects such changes have on small farmers in the project area. In some cases, data on size of holding might also be necessary to monitor changes in the concentration of land ownership.

Commercial Activity. Increased agricultural production can stimulate the growth of small businesses which service local farmers (e.g., grain mills, crop processors, farm supply businesses). Data on the number, size, and volume of trade can further clarify the impact of road projects on the local economy.

Quality of Life. The ultimate objective of most development projects is to improve the quality of life of the beneficiary population. Rural road projects achieve this objective through increasing contact between central towns and outlying or remote communities. As a result of road improvements, villagers in the project area will have greater access to available services, such as agricultural extension, education, health, nutrition, and family planning. Data on access to services, therefore, is important for evaluating project impacts. Quality of life data can also serve as a useful proxy for various project impact data which are too difficult, time consuming, or expensive to collect. For example, increased farm production should raise income levels; however, estimating household conditions which can be observed directly could be used as a proxy for more complicated income estimates. With some ingenuity and knowledge

about the project area, a set of quality of life indicators collected at the village level (i.e., pertaining to the community at large) can be a very effective means of assessing project impact on beneficiary populations. In most cases, simple presence/absence indicators will suffice and can be used to construct composite indices or cumulative scales (e.g., Guttman Scales).

Local Participation. For projects which use local laborers from communities in the project area for construction and maintenance, data on the impact of additional income derived from such work might be very useful. In other words, the road itself becomes a source of income generation. Conversely, where labor is provided by communities on a voluntary or unpaid basis, the evaluation might also consider whether construction or maintenance might be improved if a pay-for-work arrangement were employed. Furthermore, data on local participation can be useful for comparative analyses focusing on the effectiveness of alternative construction and maintenance systems used in road projects.

Other Social Impacts. Some projects might also need to collect additional data on migration changes which could be linked to road improvements. Increased access to urban areas might induce greater out-migration. On the other hand, economic growth in the project area might lead to reduced out-migration where such a pattern existed. Data on the impact of the project on special subgroups within the beneficiary population, such as women and ethnic minorities might also be needed.

Note: A cost-effective means for obtaining data for derived impacts is village-level data collection. A key informant (e.g., the village leader or representative) provides information about typical or characteristic conditions, actions, and behaviors of the community. Such village-level data are often sufficient for project information needs.

2.2.3 Prioritizing Data Requirements

The same conservative approach suggested above concerning project impacts should also guide decisions concerning data collection. Limiting the number and range of project impacts is an essential first step toward keeping data collection within manageable boundaries. Equally as important, however, is restricting the amount of data to be collected within a given category (e.g., vehicle operating costs, marketing). In general, the surveys should only collect data which are necessary for measuring or estimating socio-economic impacts identified as fundamental to project success. Again, avoid the temptation to collect detailed data in favor of a limited number of key indicators.

2.3 Step 3: Selecting an Appropriate Survey Approach

The next step in planning surveys is selecting an appropriate survey approach. Quite simply, the survey approach serves as the vehicle for obtaining necessary data identified in Steps One and Two. Cost is usually the primary factor determining which survey approach is appropriate for the project. However, there are additional considerations in selecting a study approach which should be taken into account particularly at the project design stage when the initial plans for a baseline and follow-up survey are made.

2.3.1 Selection Criteria

Type of Impact Studied. After determining which direct and derived impacts should be evaluated using survey data, and determining the specific data needs to measure those impacts, a survey approach must be selected which can collect the type and amount of data required with adequate precision to meet project information needs. (For specific examples of typical project impacts a study would measure or investigate, see Sections 2.2.1 and 2.2.2 on direct and derived impacts.)

Representativeness of the Data. An important question for those planning baseline and follow-up surveys is how representative of the total beneficiary population the data must be to meet project evaluation needs. Representativeness in this context refers to the degree to which study results can be generalized to the entire beneficiary population. For example, a 10-percent random sample of farmers stratified by size of land holding (i.e., random selection of individual farmers who have first been grouped according to the amount of land they work, with a total sample size equivalent to 10 percent of the total number of farmers in the project area) would provide highly representative data. In contrast, a detailed case study of two or three purposively selected villages would provide illustrative or indicative information, but not data which were statistically representative of the total project beneficiary population. One note of caution: representativeness is not synonomous with the appropriateness or utility of the data; rather, the latter are determined by project needs, not by the method of data collection.

Accuracy of the Data. Data quality is determined by two principal standards: (a) validity -- do the data actually measure what they purport to measure -- and (b) reliability -- are the data accurate enough so that the same result could be obtained by remeasurement (or observed by another data collector).

Replication of Methods. The basic logic of baseline and follow-up surveys is that the same data will be collected at two or more points in time to measure changes which are at least in part attributable to project interventions. Therefore, the methods and procedures used in the baseline survey must be amenable to replication by the follow-up survey.

Possibility for Secondary Analysis. The return on the

investment made in data collection is increased by each subsequent use. That is, the costs of data collection are spread over the various uses of the data; for example, data initially collected for evaluation purposes which are also used for subsequent project design activities. Where multiple uses of the data are a consideration, a survey approach should be selected which will produce data suitable for the secondary analysis.

Computer Analysis. Computer requirements are an important consideration when statistical analysis of survey data is required. With the increasing capacity and durability of microcomputers, more analysis using such equipment should be possible in the field or at least in-country.

Time. Time requirements are primarily a function of the amount and type of data to be collected. Conversely, projects operating under severe time constraints (e.g., project implementation has started, but the baseline data have not yet been collected) are forced to limit data collection and select an approach to accommodate their situation.

Technical Assistance. The type of technical assistance and the size of the technical assistance team required to conduct the survey within the time frame of the project clearly must fit within the budget allotted to data collection and analysis.

2.3.2 Three General Survey Approaches

Survey approaches can vary widely from minimum efforts, which produce very rough estimates of costs, conditions, and the like, to highly structured, statistically rigorous sample surveys. In this regard, the approach selected has to be tailored to the specific needs and circumstances of the project. However,survey approaches can be categorized into three general groups -- minimum, low cost, and high cost -- based on the level of effort entailed. The differences between these three approaches are summarized in Table 1 using the preceding criteria and cost.

The three general approaches to baseline and follow-up surveys can be briefly characterized as follows:

Table 1. Comparison of Alternative Approaches to Baseline and Follow-up Surveys

	Type of Approach		
Criterion	Minimum	Low Cost	High Cost
Type of impact studied	direct impacts only	primarily direct, some derived	direct and derived impacts

Representa-tiveness of data	indicative for direct impacts	indicative of project area	statistically representative
Accuracy of the data	low to medium	low to medium	highest possible
Replication of methods	general procedures only	possible with adequate documentation	possible to replicate identically
Possibility of secondary analysis	usually none	possible, but very limited	can be used for multiple purposes
Computer required for analysis	no	no, but might be useful	yes
Time required	2-3 person-months	3 person-months or more	varies, but typically more than alternative approaches
Technical assistance required	1 professional with transportation expertise; 1-2 interpreters/	1 professional with transportation/ rural development expertise; 1-2 social scientist;	1 survey statistician/ analyst; 1 transportation/rural development 2 or more interviewers;

Minimum Surveys. When project funds for data collection and analysis are very limited, minimum surveys will have to suffice. The survey should be restricted to collecting data for evaluating only the most important direct impacts. The findings of the surveys should be used very conservatively as merely indicative at best of existing conditions in the project area. Typically the data produced by minimum surveys will be so tightly focused on the specific needs of the project that little if any secondary analysis will be possible. In comparison to alternative approaches, the major advantages of minimum surveys are their very low cost and limited professional staff requirements (usually one professional with transportation expertise). Their major disadvantages are the marginal representativeness and questionable accuracy of data on factors which vary widely throughout the project area. It should be pointed out that if time or budget constraints do not permit this minimum level of effort, then a baseline and follow-up design should not be attempted at all. Instead, a one-shot rapid reconnaissance effort should be made at the conclusion of the project.

Low-Cost Surveys. For many AID projects, a low-cost approach to data collection will be sufficient to meet information needs. In low-cost approaches, an effort is made to use, at least in principle if not in practice, the standards for statistically representative data. Such methods might include a

nonrandom selection of communities for village-level surveys which purposively include cases which represent major patterns of variation within the project area (e.g., ethnic differences, geographic areas, propinquity to the road). If a number of villages are to be included in the survey (20 or more), the professional in charge of the survey will need one or two field assistants who can act as interpreters (if necessary) and interviewers. A literate person from the project area with a minimum level of formal education should be adequate for the task. In short, the major advantages of low-cost approaches are cost, minimum professional staff requirements, and possible improvements over minimum surveys in data quality and range of data collected. Their disadvantages are questionable representativeness and accuracy of the data (in comparison to statistically rigorous surveys) and required professional expertise in the fields of transportation and rural development. Nonetheless, low-cost approaches offer a very attractive compromise between minimum and high-cost surveys.

High-Cost Surveys. High-cost surveys are multiple-round sample surveys that follow statistically rigorous methods and standards. The minimum costs of just one round of these surveys will be approximately $50,000. Depending on local capabilities for conducting sample surveys, training of host country staff, the size and comprehensiveness of the survey, and other inflationary factors, the cost per round could easily be substantially higher. Even at the roughly $50,000 per round, projects will need at least $100,000 to complete the baseline and follow-up surveys using a high-cost approach. What is being purchased is data quality, representativeness, and/or coverage of both direct and derived impacts. For example, it might be decided that transport surveys which sample vehicle traffic over time are needed to evaluate project impacts. (See AID, Rural Roads Evaluation Summary Report, Program Evaluation Report No. 5, Appendix E for a discussion of transportation survey methods.) High-cost approaches are probably best suited to projects which either individually or jointly (with other projects) attempt to establish or upgrade a permanent data collection and analysis unit (e.g., a monitoring and evaluation unit in a Ministry of Public Works). In such cases, the survey data can serve as the initial foundation of a major data base for planning and monitoring development activities. For single project evaluations, high-cost approaches should for the most part be restricted to projects with total funding at $5,000,000 or higher. In general, high-cost approaches will require professionals (perhaps one, usually two) with survey methodology skills, substantive knowledge about transportation and rural development, and familiarity with the project area. Field interviewers and data processors are also needed in most high-cost surveys. In short, this approach will typically require a survey team rather than merely one professional. The major advantages of high-cost approaches are high data quality, representativeness and coverage, and possible secondary analysis. In comparison to alternative approaches, the major disadvantages of high-cost approaches are expense and time and staff requirements.

2.3.3 Control Groups

One final point worth making pertains to the use of control groups. Control group designs provide a basis for comparing conditions between (1) communities in the project area which benefit from the road and its impacts and (2) communities outside of the project area which do not benefit from the road. significant differences between the project and control communities on key criteria (controlling for other pertinent factors) would lend credence to the conclusion that improvements are, at least in part, due to the effects of the road. Control group designs are probably more appropriate for low- and high-cost surveys than for minimum approaches. But in principle, a control or comparison group could be included in each of the three approaches. However, control group designs have the disadvantage of increasing the amount of data which has to be collected; that is, the same data collected for the communities in the project area must also be collected for the selected control communities. Clearly this increases costs and time requirements for data collection and analysis. There is no simple solution to this problem. On the one hand, control groups strengthen the legitimacy of findings concerning road impacts, but, on the other hand, additional data collection and analysis might not be possible given time and budget constraints. As a rule of thumb, use control group designs, even if only in a few cases (e.g., communities), if resources permit. When it is not possible to use control groups, remain alert to the perhaps significant limitations this imposes on the interpretation of findings.

2.3.4 Fitting the Survey Approach to a Fixed Budget

Ideally the pros and cons of alternative survey approaches are considered during project design. For example, at the PID stage, project designers determine that baseline and follow-up surveys will be needed to evaluate project impacts. By the PP stage, a survey approach which best serves the needs of the project should have been selected and included in the project budget. In practice, it is probably unlikely that such careful thought has been given to such matters. Project managers have a certain amount set aside for evaluations, and it is their task to determine by what means the necessary data will be collected and analyzed. Consequently, the process of selecting a survey approach will typically be the reverse of the ideal case that is, instead of budgeting for data collection adequate to meet project information needs, a given budget will determine what type of data collection will be possible. In such cases, a survey approach will be selected simply because it is affordable and not necessarily because it is the best means of meeting project information needs.

When selecting a survey approach primarily on the basis of cost, an important point to be kept in mind is that any data collection effort that is well done is far preferable to one which is mismanaged, seriously flawed, or generally botched.

This means that if a minimum survey is the most that can be done correctly given available funds, then that is what should be done and not something more sophisticated which is poorly executed because of insufficient resources.

2.4 Step 4: Writing a Scope of Work Which Combines Steps 1-3

The final step in planning baseline and follow-up surveys is writing a scope of work which is based on the decisions made concerning project impacts to be evaluated, data requirements, and study approach. If steps 1 through 3 have been followed carefully, writing the scope of work should be a fairly easy task. Like any other scope of work, the scope of work for baseline and follow-up surveys should be as clear and precise as possible concerning (1) what categories of data are to be collected, (2) how they are to be collected within a specific period of time, (3) how findings are to be reported, and (4) how procedures used for the baseline are to be documented so that they can be replicated by the follow-up survey. The following sections discuss the basic elements of scopes of work for baseline and follow-up surveys. The appendix contains an example of a scope of work written for a rural roads project in Mauritania which illustrates these points.

2.4.1 Scope of Work for the Baseline Survey

Project Objectives and Survey Purpose. A brief statement should be made concerning the main objectives of the project and the purpose of the baseline and follow-up surveys regarding the evaluation of these objectives. This section should provide an overview to the scope of work which follows.

Study Questions and Level of Measurement. The most important part of the scope of work is specifying as precisely as possible the questions the survey should address. The level of measurement should also be stated, such as simple yes/no responses, ranges (e.g., costs range from A to X), ordinal rankings (e.g., high, medium, low), actual counts, averages, and the like. One of the most common complaints AID staff make about those contracted to conduct a study is that the information obtained was not what was really wanted. Conversely, contractors and others who conduct AID surveys complain that it was never made clear exactly which areas were to be studied and which questions were to be answered. Clearly these problems can and should be minimized by scopes of work which spell out in detail the types of information needed for the project. The general categories of data to be collected (such as those cited in Section 2.2) should be listed, and precise questions within those categories should be included. Without such guidance, those conducting the survey will not know exactly which variables are most important to the project's evaluation. It is the responsibility of the AID project manager, and not the researcher(s), to make these key decisions.

A useful strategy for writing this part of the scope of work is to build in a degree of flexibility concerning the specific questions to be answered while holding firm to the general categories to be studied. That is, the scope of work would list what appear to be key study questions within each category with the understanding that the person in charge of the survey would have the latitude to modify, delete, or add questions as field conditions dictate (e.g., initial fieldwork indicates certain questions are inappropriate or too time consuming to investigate). Obviously this relies on the judgment of the principal investigator to adjust the survey to actual field conditions while holding to the main areas necessary to evaluate project impacts. Such a presumption of competency may or may not be reasonable; where it is not, the scope of work should be followed very closely by the contractor.

Study Approach: Methodology and Data Sources. The scope of work should specify the study approach to be used. This would include the types of data collection methods (e.g., informal interviewing, sampling, purposive selection), the principal units of analysis (e.g., farm households, villages), the types of data collection instruments (e.g., pre-test questionnaires, rapid reconnaissance of project area to identify suitable study locations). This section should also indicate likely sources of information in the field (e.g., truckers operating out of central markets, government offices and officials located in the project area, village or community leaders). Such guidance can be extremely useful for getting the study under way as fast as possible. A certain degree of flexibility is also possible here. As with the study questions, competent professionals conducting the survey might find that the study approach needs to be modified to better suit field conditions. Again, such flexibility depends on the calibre of the person in charge of the survey.

Background Materials. The Mission and the appropriate AID/ Washington office should identify all pertinent materials, such as previous studies conducted by AID and other international agencies. Such assistance can be extremely useful by providing additional data for the study.

Time Frame. A schedule of activities -- from start-up through submission of final reports -- should specify how much time should be devoted to each part of the survey/study. Too often sufficient time is not allotted for covering background materials before fieldwork starts. This oversight is in part due to the false idea that only fieldwork produces useful information for evaluation purposes. Those planning baseline and follow-up surveys should give particular attention to an adequate review of existing materials in scheduling activities for the study team.

Deliverables: Survey Reports and Documentation of procedures. The scope of work should specify the frequency and content of reports that are to be submitted about (1) the progress of the study (if necessary) and (2) survey findings. For most projects, and particularly for those using minimum or

low-cost approaches, progress reports are not necessary because the period of work is relatively short. Progress reports are a consideration when high-cost approaches, such as sample surveys, are used. For most projects, a final report presenting findings on the study questions will be sufficient. The scope should specify how many copies are to be submitted, to whom, and in what languages.

For the most part, the scope of work does not have to specify in advance precisely how the data will be analyzed. To a large extent, requirements for analyses are implicit in the type of study questions to be answered and the study approach to be used, particularly for minimum and low-cost approaches. For high-cost surveys where sample survey data will be collected, the researcher(s) conducting the study should develop in writing a clear plan of analysis before fieldwork actually begins. The scope of work could specify a plan as a deliverable under the terms of the contract. Where particular factors warrant special atten- tion, such as ethnic or regional variation in project impacts, the scope of work should request special analyses of these variables. Similarly, specific estimates, which could be used for before-and-after comparisons, could also be specified (e.g., determining the relative expense of shipping using a ratio of shipping charge to farmgate price of a commodity).

Perhaps the most important point to keep in mind regarding data analysis is to keep it simple. Tables, graphs, charts, maps, and simple cross-tabulations will in most cases be sufficient for project purposes and frequently will be all that the data will permit. Sophistication is no virtue if it has the effect of making the findings indecipherable to those who need the information. In short, the analysis should focus on the specified objectives of the evaluation. If someone wishes to conduct further analyses, that should be done after the evaluation has been completed. (For further guidance about data analysis in general, see AID, Manager's Guide to Data Collection, 1979.)

Report formats (i.e., how study findings are presented) vary according to the type of approach used. For minimum and low-cost approaches, the final report will consist primarily of a discursive summary of findings. For high-cost approaches, a more structured report should be required which produces tables of statistical findings followed by brief discussions of the results. (This also applies to low-cost approaches which collect some statistical data.) One problem with discursive reports is that the specific findings for key study questions can be buried among other descriptive materials. One solution to this problem is to specify that findings are to be organized by category of data and/or specific study questions as stated in the original scope of work. As in any type of report, a concise one- to two-page executive summary should be required.

It is very important to obtain complete and thorough documentation of procedures and methods used to collect data for the baseline survey. The fundamental logic of before-and-after

designs is that the follow-up study/survey will replicate the baseline as closely as possible if not exactly. Replication is absolutely essential if the data are to be used to show change over time attributable to project interventions. Therefore, it is necessary to have a detailed account of how the baseline survey was actually conducted.

Documentation for minimum and low-cost approaches would include a description of where transportation data were obtained (e.g., which market towns), and which villages were selected for study. A map locating selected villages is often necessary. For high-cost approaches, such as sample surveys, sampling methods (e.g., how respondents were selected, how villages were selected), questionnaire development, interviewer training, and field procedures should be documented. (This would also apply to low-cost surveys which collect some statistical data.) Regardless of the approach used, the principal researcher should also discuss any known problems or hidden limitations of the data. If data have been stored in computerized form (e.g., on tape or diskette), a usable copy accompanied by complete documentation about data storage and format should also be required. In short, the scope of work should clearly specify the types of documentation and supporting materials that are to be provided to the Mission or host country. It is then the responsibility of the Mission or host country to safely store these materials so that they will be available for the follow-up survey.

Required Skills. The scope of work should stipulate the various skills required for conducting the survey. This would include educational background, language proficiency, field experience, and knowledge about the project area. For rural road improvement projects, individuals with formal M.A.- or Ph.D.-level training in economic anthropology, rural sociology, transportation economics, or agricultural economics are usually necessary. Field experience in conducting research is generally more important than previous work in the project area if the individual has the appropriate education and language skills. However, familiarity with the agricultural and cultural systems of the project area is a definite advantage. One final consideration tion regarding minimum and low-cost surveys is finding a person who understands the principles of research methodology yet is capable of modifying or accommodating these standards to the constraints of the project and field conditions.

2.4.2 Scope of Work for the Follow-up Survey

Given that the follow-up survey should replicate as closely as possible the baseline survey, the same scope of work can for the most part be used for both surveys. One major difference concerns the content of the follow-up survey report. The principal focus of the report should be observed changes (or lack thereof) which can in part be attributed to project outputs -- that is, project impacts. This will require a careful review of the baseline study report. (This reinforces the point that the baseline report should present its findings concerning key study

questions in as clear and straightforward a format as possible.) Data from the follow-up survey then must be analyzed and findings compared to those of the baseline study. This might require additional work time, perhaps 1 week. However, methodological documentation of the follow-up survey can be reduced (unless another round of data collection is anticipated). A discussion of how the methods and procedures used for the follow-up survey differ from those of the baseline survey, (for example, because of changes in field conditions) should be sufficient.

3. A FINAL WORD OF CAUTION ABOUT BASELINE AND FOLLOW-UP DESIGNS

Actual events often produce results different from what was initially desired. This certainly applies to AID's past experience with baseline and follow-up surveys. Many examples can be found of well-planned studies going awry. For any number of reasons, the data collected by the baseline survey are either inadequate or so seriously flawed that they are virtually unusable. Alternatively, host country support for data collection wanes during the course of the project (assuming such interest existed in the first place). In both situations -- a seriously flawed baseline or a disinterested host country ministry -- careful thought must be given to the utility of the follow-up survey. In the first case, it must be determined whether anything can be salvaged from the baseline. This will require professional research judgment. In the latter case, it has to be determined whether the follow-up survey is important enough to the project evaluation to warrant efforts to strongly urge the host country to support it. In both instances, a decision has to be made on whether the follow-up constitutes a worthwhile endeavor or whether it is simply throwing more good money after bad.

APPENDIX

SCOPE OF WORK FOR THE SOCIO-ECONOMIC BASELINE STUDY FOR A RURAL ROADS IMPROVEMENT PROJECT IN MAURITANIA

1. PURPOSE OF THE BASELINE STUDY

The baseline study is one-half of the research needed to evaluate the socio-economic impact of the Rural Roads Improvement Project in the Guidimaka-Gorgol area of Mauritania. The second half will be the follow-up study which will be conducted at the conclusion of the project and which should replicate as closely as possible the procedures followed by the baseline study. The primary purposes of the baseline and follow-up studies are to (1) assess improvements in transportation services, marketing, and related activities within the Guidimaka-Gorgol area resulting from the project; and (2) evaluate the socio-economic effects on small farmers which can, at least in part, be attributed or imputed to road improvements, lower transportation costs, and/or greater access to services, supplies, and markets. The baseline study, therefore, must provide benchmark estimates, albeit

approximate, of current transportation costs to users and providers; the movement of goods and commodities into and out of the Guidimaka-Gorgol area; and, at the village level, farming activities and the quality of village life so that changes can be empirically verified by the follow-up survey.

2. STUDY QUESTIONS

As indicated above, the baseline study should obtain information about the existing transportation system in the GuidimakaGorgol area and village conditions which are likely to be affected by the completed outputs of the project. Budget and, consequently, time constraints preclude the collection of statistically representative data. For the most part, therefore, the best that the baseline and follow-up studies will be able to do is answer the following questions with qualitative approximations (e.g., high, medium, or low) and estimates expressed as ranges from low to high (e.g., the cost of transportation ranges from X to Z). The questions cited below should be viewed as indicative of the types of information the survey should provide. That is, some of the questions might be found to be inappropriate or in need of rephrasing after some initial field work. Similarly, other questions might have to be added. The person conducting the survey should have the latitude to make such changes as necessary. However, AID/Washington staff and AID's past experience with evaluation of rural road projects indicate that the general categories of questions (e.g., transportation costs, farmgate prices, access to services) must be addressed by both the baseline and follow-up surveys.

2.1 Transportation and Marketing

A major focus of the baseline study should be the existing costs incurred by small farmers, transportation providers, and intermediary traders. It is also important to estimate the flow of goods into and out of the Guidimaka-Gorgol area to ascertain whether, and to what degree, road improvements expanded or altered the current pattern of trade.

Charges. What are current transportation costs by road and other means (e.g., tracks) for the major crops produced and goods used by small farmers in the Guidimaka-Gorgol area? Estimates stated as a range for each crop (if such differences exist) will be adequate. What are the current transportation charges for passengers by taxi, truck, or other vehicle? What sources of nonmotorized transport (i.e., animal-drawn vehicles) are available to farmers in the area? What charges are involved in nonmotorized transportation?

Competitition. Is there significant competition among providers of transportation and among marketing agents? Are these activities monopolized by a small group, such as a union or association? If such monopolies exist, are transportation and marketing charges higher as a result or are charges a fair

reflection of actual costs? Do vehicle operators and intermediary traders belong to the same ethnic or cultural group as small farmers in the region? Do ethnic differences affect the provision and competitiveness of transportation in Guidimaka-Gorgol (e.g., does one ethnic group dominate transportation services)? Are there any significant barriers -- ethnic or other -- to becoming a transporter or marketing agent?

Current Use. What is the average daily traffic (motorized and animal drawn) between the major towns in the Guidimaka-Gorgol region (between Kaedi, M'bout, Selibabi, and Gouraye)? How long does it take to travel between these points using (1) roads and (2) off-road tracks during the dry season? During the rainy season?

Expenses. What are the current operating expenses of vehicle operators for fuel, repairs, and other charges on a monthly basis?

Destination and Origin Outside of the Region. What goods or commodities are vehicle operators carrying to and from Nouakchott? What goods do they carry for export to Senegal or Mali? What goods do they carry which have been imported from Senegal or Mali? If possible, try to estimate the volume or value of these goods. What percentages of their shipping activities involve imported or exported goods (i.e., do these goods constitute a significant proportion of their income)?

Note: The use of the word percentage is more a matter of convenience than an indication of the expected form for an answer. In general, the survey should deal with such "percentage questions" in terms of qualitative rankings or estimated proportions (e.g., high/medium/low or substantial/marginal).

2.2 Village Well-Being and Farm Activities

The second major component of the baseline survey is the economic and social well-being of small farmer communities in the project area. Data for this portion of the survey are to be obtained through a village-level survey. Sets of questions covering the following topics should be developed so that village leaders or spokespeople can provide information about current village conditions and general farming and marketing activities. Note that the term farmer is used below to refer to the sedentary population of the village. Data on seminomadic herders are beyond the scope of the survey.

Farming and Marketing. What crops do most of the farmers in the village produce? What are the current farmgate prices for the principal crops produced? How much do farmers sell to the government? To other buyers? Do all the farmers deal with the same intermediary trader/marketing agent to sell their products? What are the most common land tenure arrangements for farmers in the village? How many own land? How many use fertilizer or improved seed (e.g., half, a few, none)?

Quality of Life Indicators. What access to services do the villagers have? How often are they contacted by government agricultural extension agents if at all? By health extension workers? Do they or their children have access to educational services? How often does someone from the village travel to the nearest large town? What types of goods are usually purchased from the nearest large town? What is the typical construction material used for house walls? For roofs? Do villagers have easy access to relatively clean water? What is the average value of materials invested in housing? What investments do villagers make as a group or individually to improve their community?

Villagers' Perceptions. What, if any, benefits do villagers perceive as resulting from the road project? Do they perceive the road improvements as an inducement to increase their farm production? Do they expect the government to maintain the road? Are they willing to help maintain the road?

3. STUDY APPROACH: METHODOLOGY AND DATA SOURCES

The principal data collection methods involving fieldwork for the baseline survey are (1) interviewing transport operators and marketing agents about costs, road use, shipping patterns, and the like; and (2) collecting community-level indicators of village well-being.

To obtain information about transportation charges and conditions, the person conducting the survey should interview marketing agents, truckers, and other providers of transportation in Selibabi, Gourays, and possibly Nouchkchott. They should be able to provide the information needs listed in Section 2.1, Transportation and Marketing.

Collecting data at the community level will provide estimates of village conditions at the outset of the project. As described in Section 2.2, data on farming activities and the social well-being of villagers should be obtained from village leaders or other spokespeople. An important consideration for the researcher in charge of the baseline survey will be selecting villages throughout the project area where the impact of road improvements is likely to be significant. If conditions and time permit, 20 or more villages located between M'bout and Gouraye should be selected for data collection. The villages selected should represent, as well as conditions allow, major sources of variation within the project area. At the very least, the set of villages selected should include major ethnic groups and reflect differences due to distance from the main road. To cover 20 or more villages, the researcher will need one or, preferably, two young people from the project area who can serve as interpreters/interviewers. The person in charge should initially visit each village, explain the purpose of the survey to village leaders, and arrange to have the research assistant return to interview village leaders. This will

require developing a simple questionnaire which should be field tested if time allows. A simple checklist type of questionnaire containing categoric items (e.g., presence/absence, none/some/many) which can be observed directly or reported by village leaders should be constructed. All of the topics in Section 2.2. should be handled in this fashion. The questionnaire should be short and consist of key indicators pertaining to survey information needs. The questions should address general conditions and typical behaviors and avoid detailed or complex responses. The importance of this portion of the survey is that it can be used again by the follow-up survey.

Other useful sources of information include the regional agricultural authorities at Kaedi and Selibabi, and Public Works Department of the Ministry of Transport, and the agricultural personnel of the Ministry of Rural Development.

4. TIME FRAME

The budget allows for roughly 3 person months to conduct the baseline survey. The following is suggested as a tentative timetable and work plan for the survey:

Weeks One and Two: Cover background materials in AID/ Washington and briefings by Africa Bureau staff; travel to USAID/Mauritania for additional briefings and for assembling pertinent background materials; develop the village-level questionnaire and field test if possible before reproducing final drafts which will be used by the researcher and assistants.

Note: Travel around the project area will be necessary. USAID/ Mauritania should provide a four-wheel drive vehicle and driver. If possible, the Mission should assist with identifying and hiring the two interpreters/interviewers described above. Also, the Mission should arrange housing ahead of time. In short, given the limited amount of time the principal researcher will have in the field, the Mission should prepare as much as possible to expedite matters.

Weeks Three Through Ten: Approximately 8 weeks of fieldwork will be needed to collect the survey data. The researcher will have to interview transportation providers and intermediary traders about transportation costs, charges, patterns of trade, and other topics described in Section 2.1 Contacting and interviewing these individuals should be possible on market days in Selibabi and Gouraye. The researcher should remain alert to other possibilities as well. This work should be conducted coterminously with the village-level data collection described in Section 2.2. The researcher will decide how to best allocate time between these two main activities.

Weeks Eleven and Twelve: In USAID/Mauritania, write up findings for a baseline survey report and document procedures and methods employed so that the follow-up survey can replicate the baseline.

5. BACKGROUND MATERIALS

Africa Bureau staff and USAID/Mauritania should provide pertinent background materials which contain estimates of agricultural conditions and transportation costs in the Guidimaka-Gorgol area (e.g., data sources used for the PID and PP). Additional studies prepared by the Permanent Interstate Committee for Drought Control in the Sahel (CILSS), the the International Food Policy Research Institute (IFPRI), and Food and Agriculture Organization (FAO) should be made available. Data from Societ® Nationale Pour le D®veloppement Rural (SONADER) or Societ® Nationale d'Importacion et d'Exportacion (SONIMEX) might be useful for the baseline survey. Two recent sector assessments -- Assessment of the Food and Agriculture Sector of Mauritania and Analysis of Crops, Livestock, Forestry, and Environment -- provide useful background information and some specifics about Guidimaka. Also, A. Manzardo's Land Tenure and Community Development in the Islamic Republic of Mauritania (Land Tenure Center, University of Wisconsin, 1981) should be obtained. The following RAMS studies might also be useful: AE4-1 and 3, AS-2 through 6, AS-9, and SS-1 and 3. The Rural Roads Evaluation Summary Report (AID Program Evaluation Report No. 5, March 1982) provides additional pertinent information for this survey.

6. FINAL REPORTS

A final report in French and English is required. The Mission should determine how many copies of each are needed. The report should contain the estimates for the study questions cited above. It should briefly discuss additional supporting evidence where appropriate, such as the researcher's observations about matters pertaining to the study questions. simple tabulations (e.g., determining ranges) and other descriptive uses of the data should be sufficient. Again, the researcher should determine the most appropriate format to present the findings and cover the key study topics and questions. One important consideration in analyzing and presenting the main findings of the survey is variation among different ethnic groups in the project area. Geographic location and propinquity to the main road should also be examined. If such intraregional variation is found, presentation of findings should reflect these differences. Equally as important is a section or annex which discusses in detail the methods and procedures used for the baseline survey. This part of the report should

-- Specify where information was obtained

-- Contain a list and map of villages which were selected for the village-level interviews

-- Provide an unmarked copy of the village-level questionnaire (e.g., the questions used to interview village

leaders about general farming activities, quality of life, and access to services)

-- Discuss the use of the village-level questionnaire (e.g., contacting and interviewing village leaders, problems with the process)

-- Discuss any other issues or materials the researcher deems necessary for replicating the baseline survey as closely as possible at the conclusion of the road improvement project (i.e., for the follow-up survey)

Finally, the researcher should leave with USAID/Mauritania the complete village-level questionnaires, and the Mission should store them so that they will be available when the follow-up survey is undertaken.

7. SOURCE OF TECHNICAL ASSISTANCE AND REQUIRED SKILLS

Given the necessity of conducting the baseline survey as soon as possible, the most likely source of technical assistance is a contractor obtained through an Indefinite Quantity Contract (IQC) or directly by the Mission through a personnel services contract. One well-qualified person should be able to complete this scope of work. Ideally, the same person who conducts the baseline survey should also conduct the follow-up survey. Although such continuity is highly desirable, it is not necessary if the methods and procedures used for the baseline survey are thoroughly documented as stipulated above. The person contracted for this assignment must speak French fluently. Knowledge about the Guidimaka-Gorgol area would be a definite asset; however, it is unlikely that the Mission will find such a person. Familiarity with agricultural and cultural systems in the Sahel and if possible, in Mauritania should be sufficient. This person should have a sound grasp of social science methods,be able to structure the work according to the underlying principles of social science research, yet recognize that these standards must be modified to accomplish the task at hand. Likely candidates would have training in economic anthropology, rural sociology, or agricultural economics to the M.A. if not to the Ph.D. level and have experience at conducting field research.

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